Project Description

Improving Groundwater Management in the Southern Sierra Fractured Bedrock Aquifer

On behalf of the Southern Sierra Integrated Water Management (SSIRWM) region, Sierra Resource Conservation District submits this grant proposal to the California Department of Water Resources' Local Groundwater Assistance Program in order to obtain funds to conduct a fractured-rock groundwater study for the watershed and community of Three Rivers, CA (see Figure 1: Topographic map of Three Rivers)

Background

The SSIRWM region encompasses the upper watersheds of the San Joaquin, Kings, Kaweah, Tule and Kern rivers, as well as Poso Creek, Deer Creek, and White River. Approximately 34,000 residents live in this region and rely primarily on limited and variable supplies of groundwater pumped from fractured rock aquifers. Within the SSIRWM region are the Sequoia, Sierra and Inyo National Forests and Sequoia and Kings Canyon National Parks. These public lands draw over 1.6 million visitors per year and rely on the region's water supply. Visitors are a great economic resource to the region, but add significant seasonal demands to the local fractured bedrock groundwater supply that must also support the region's permanent residents. Very little groundwater information is available and accessible for resource planning in the region where fractured bedrock aquifers serve remote, disadvantaged communities through individual wells and septic tanks. There are no incorporated cities and only small water treatment plants and the majority of the region utilizes wells and septic tanks. County general plans call for development in the foothill and mountain communities yet sustainable use rates have yet to be established for existing communities who rely almost exclusively on fractured-rock aquifers. The region is supported by a small number of public districts, including Three Rivers Community Services District, Springville Public Utilities District, several small water associations, many private ditch companies, two resource conservation districts and two resource conservation and development councils.

Specifically, the town of Three Rivers, in the County of Tulare, has approximately 1,700 full time residents and also supports over 500,000 seasonal tourists. The town relies on individual wells and water supplies from the Kaweah River watershed. Surface water supplies originate from Sequoia and Kings Canyon National Parks and Sequoia National Forest and fluctuate seasonally with snowmelt and precipitation. Groundwater supplies also fluctuate seasonally, but amounts and extents are unknown. The area's water quality also fluctuates seasonally, but locally, drinking water must be boiled to be drinkable. Because they, like most other communities in the SSIRWM region, rely on fractured-rock groundwater, it is critical to conduct this study in order to plan for and sustainably manage their groundwater supplies. Water quality in Three Rivers has been historically good, but some water sources in the area are under a water boiling order. This problem is exacerbated by nutrient plumes from septic tanks and low water quantities late in the summer in drought cycles.

Status of the Groundwater Management Plan

Although the Southern Sierra region of the state does not currently have an Integrated Regional Water Management Plan (Plan), we are currently in the process of developing one. With this proposal, the SSIRWM Water Management Group seeks funds to conduct one local fractured-rock groundwater study in order to initiate the first steps of developing the SSIRWM regional groundwater management effort. Completion of this study will also support the development of the groundwater component of the IRWM Plan and provide the Three Rivers area with an essential groundwater management tool: data. The focus of the study is localized compared to the size of the region because the SSIRWM Regional Water Management Group recognizes that, at this time, it is not yet feasible to construct a full groundwater management plan for the entire region. Most of the Region does not have traditional groundwater management basins, and a regional groundwater management plan would not be appropriate for the Region. The results of this study will benefit not only Three Rivers groundwater users, but will also serve as a starting point for other geographically similar watersheds and communities to begin to manage the limited groundwater supplies. Only the northern portion of the Isabella Groundwater Basin has been mapped and identified in the Region with the likely other unofficial basins yet to be identified.

The California Department of Water Resources agreed to partner with the group on this work to make more efficient use of funds and existing data. Data generating in this study will be applied to the California Water Plan, where very little information currently exists about the region.

This study compliments Sierra Resource Conservation District's Phase II study of groundwater in the San Joaquin River Watershed. Both studies provide information for regional water planning and collaboration and are submitted as separate, complimentary efforts.

Kenneth Schmidt, Hydrogeologist and Geologist, Kenneth D. Schmidt and Associates, prepared and presented a scope of work for studies in the southern Sierra to understand groundwater to the Southern Sierra Regional Water Management Group. Information gathered in this study will be integrated across upper watersheds by United States Forest Service hydrologists and National Park Service resource professionals in federal ownership and lower elevations in private ownership. Southern Sierra Regional Water Management Group Project Manager Bobby Kamansky, M.S., Ecology, will coordinate all major activities and oversee the elements of the study.

With this proposal, the Southern Sierra Regional Water Management Group seeks funding for accomplishing the following goals:

1. Support and inform IRWMP development, especially the groundwater components in the southern Sierra;
2. Complete a groundwater and watershed study in Three Rivers, California;

3. Initiate a partnership with DWR staff to provide critical information on watershed geology, prior studies, water quality problem areas, water budget and other information usable for planning for water resources in the region;
4. Synthesize, analyze and integrate data for the upper watersheds working with US Forest Service hydrologists and National Park Service natural resource professionals;
5. Coordinate with and outreach to stakeholders, data integration and project management.

This study will support disadvantaged community participation in water management and issue resolution.

This project does not require a CEQA determination.

Map of Project Location